

Remarks

This responds to the Office action dated August 10, 2006. Claims 1–7 and 9–13 are pending in the application and are rejected. Claims 1–3 and 8 are canceled. Applicants reserve the right to file continuing applications directed to the subject matter of the canceled claims.

New claims 14 and 15, which depend from claims 4 and 5, respectively, have been added to recite particular interparticle spacing of the clusters present in the claimed arrays. Support for these features is found throughout the specification, and particularly at page 9, lines 21–24. No new matter is presented by these claims.

Applicants thank Examiner Shibuya for granting applicants' representative, Travis Young, an interview on October 3, 2006. Applicants believe that no new issues are presented by the foregoing claim amendments. Accordingly, applicants respectfully request reconsideration of the application in view of the foregoing amendments and following remarks.

I. Objection to the Specification

The Office action states that the specification is objected to as allegedly failing to provide proper antecedent basis for the term recited in claim 4, "predetermined positions." Applicants disagree because support for this term is provided throughout the specification, including at page 7, line 10, which describes "attaching molecular scaffolds to substrates in predetermined patterns." Pages 17–21 of the application as filed also describe several means for attaching scaffolds to substrates in predetermined patterns. Applicants also submit that this term is clarified by the foregoing amendments to claim 4 as described in the section below, which explains that the scaffold is coupled to the substrate, in predetermined patterns on the substrate.

Accordingly, applicants respectfully submit that the objection to the specification has been addressed and request that it be withdrawn.

II. Rejections under 35 U.S.C. § 112

Claims 4 and 11 are rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Specifically, the Office action states that “it is unclear as whether it is the metal clusters or the scaffold that is coupled at said predetermined positions” (Office action page 7, para. 3). Applicants disagree, but have amended claim 4 to recite “coupled to the substrate, in predetermined patterns on the substrate.” Applicants’ requested amendment addresses any potential indefiniteness as to the scaffold being coupled to the substrate at predetermined positions.

Claim 11 is rejected as allegedly reciting an improper Markush group. Claim 11 has been amended in accordance with MPEP § 2173.05(h) to recite “wherein the thiol ligand is selected from thiopropionic acid [[and]] or mercaptoundecanoic acid.”

III. Rejections under 35 U.S.C. § 102

Claims 4, 5, 7, 9, 10 and 13 are rejected under 35 U.S.C. § 102 as allegedly being anticipated by U.S. Patent No. 5,521,289 to Hainfeld *et al.* (Hainfeld). Applicants traverse this rejection and request that it be withdrawn.

The Office action asserts that Hainfeld teaches various features of the pending claims. Applicants disagree. For example, applicants maintain that their prior stated positions that Hainfeld does not teach a substrate, does not teach organized arrays or scaffolds coupled to a substrate in a predetermined pattern. Nonetheless, to expedite prosecution and further clarify the

distinctions between Hainfeld and claims 4 and 5, applicants have amended these claims to recite “a plurality of gold clusters being coupled to the scaffold;” and “the clusters having an interparticle spacing of less than about 5 nm.” Support for these amendments is found throughout the specification, for example at page 4, lines 17, 18 and at page 9, lines 21–24. No new matter is added by these amendments.

Hainfeld fails to teach or suggest a plurality of clusters being coupled to a scaffold, instead, Hainfeld explicitly limits his probes to the formula M–Or–L, (see, Hainfeld, col. 8, lines 55–65). As Hainfeld explains M is the metal particle; Or is “an organic group; and L is a lipid moiety. Thus, this formula includes a single metal particle for each organic moiety. In contrast, claims 4 and 5, and therefore claims 7, 9, 10 and 13–15, which depend from claims 4 and 5, recite a plurality of metal particles. Hainfeld further emphasizes that only a single metal cluster is attached to each organic moiety “Or” throughout his specification and claims, for example, stating: “[s]mall organometallic probes comprise a core of metal atoms bonded to organic moieties” (Hainfeld, Abstract, lines 1, 2)(emphasis added). Hainfeld provides a second formula for his probes: “ $M_n(ORF)_m(Or'T)_{l(Or'')_p}$ ” wherein “n” refers to the number of metal atoms in a cluster, not a plurality of clusters. Because Hainfeld fails to teach a plurality of clusters being attached to a scaffold as recited in claims 4 and 5, these claims, as well as dependent claims 7, 9, 10 and 13–15 are novel over Hainfeld.

Claims 4 and 5 further distinguish the teachings of Hainfeld by reciting “the clusters having an interparticle spacing of less than about 5 nm.” Because Hainfeld fails to teach scaffolds having plural clusters, Hainfeld cannot teach any interparticle spacing, much less the specific range recited in claims 4 and 5. Thus, Hainfeld fails to teach or suggest all of the

features of claims 4 and 5 as well as of claims 7, 9, 10 and 13–15 which depend from claim 4 or claim 5.

Because Hainfeld teaches neither plural particles coupled to a scaffold nor any spacing between such particles as well as the combination of these features with other aspects of applicants' claims, applicants submit that Hainfeld has been distinguished. Accordingly, applicants respectfully request that the rejection of claims 4, 5, 7, 9, 10 and 13 over Hainfeld be withdrawn.

IV. Rejections under 35 U.S.C. § 103

Claims 1–7 and 9–13 are rejected under 35 U.S.C. § 103 as allegedly being obvious over Hainfeld either alone or in combination with one or more patent references. Applicants traverse these rejections and request that they be withdrawn because Hainfeld neither alone, nor in combination with any other art of record, teaches or suggests all of the features of applicants' claims. Moreover, Hainfeld is not even available as a prior art reference under 35 U.S.C. § 103 because it is non-analogous art under the controlling law.

Claims 1–3 have been canceled. Accordingly, the rejection of these claims is moot.

As to claims 4–7 and 9–13, the art of record fails teach or suggest several features and patentable combinations of features recited in claims 4 and 5 as well as claims 6, 7 and 9–15, which depend from claims 4 and 5. The Office action also does not allege that the art of record teaches or suggests each feature recited in these claims. For example, claims 4 and 5 recite “a plurality of gold clusters being coupled to the scaffold;” and “the clusters having an interparticle spacing of less than about 5 nm.” Neither Hainfeld nor any other art of record teach these features either alone or in combination with other patentable combinations of features recited in

the claims. Accordingly applicants respectfully request that the rejection of claims 4–7 and 9–13 be withdrawn.

Applicants also maintain that any obviousness rejection based on Hainfeld is improper. Hainfeld is non-analogous art and therefore is not available under 35 U.S.C. § 103. Because Hainfeld is not available under § 103, the Patent Office has failed to establish a *prima facie* case of obviousness of any pending claim. Accordingly, applicants respectfully request that the rejections under § 103 over Hainfeld be withdrawn.

Under the approach mandated by the MPEP, before making a rejection under 35 U.S.C. § 103 "[t]he examiner must determine what is 'analogous prior art' for the purpose of analyzing the obviousness of the subject matter at issue." MPEP 2141.01(a). Only if a reference qualifies as analogous prior art can the Patent Office then consider whether the teachings of the reference render an applicant's claims unpatentable under 35 U.S.C. § 103. As is made clear by MPEP 2141.01(a) this approach is required for all statutory classes of claims, including those concerning compositions of matter. Hainfeld is non-analogous prior art, and hence the rejection of the present claims under 35 U.S.C. § 103 over Hainfeld is improper.

The Federal Circuit has established a two-prong test for determining whether a reference is analogous prior art:

- (1) is the art from the same field of endeavor (regardless of the problem addressed),
and
- (2) if the reference is not within the field of the inventor's endeavor, is the reference reasonably pertinent to the particular problem with which the inventor is involved.

In re Clay, 23 U.S.P.Q. 2d 1058, 1060–1061 (Fed. Cir. 1992); MPEP 2141.01(a).

In the present case, Hainfeld is not analogous prior art under either of the two possibilities set forth by the Federal Circuit. Under the first test, applicants' field can be

determined with reference to the specification as filed, at page 1, lines 22–25, under the heading "Field of the Invention," which states that the field "concerns a method for forming organized arrays of metal, alloy, semiconductor and/or magnetic clusters for use in the manufacture of electronic devices, such as high density memory storage and nanoelectronic devices." Hainfeld, on the other hand, "is directed to small organometallic probes... that can be used for targeting and detecting another substance, generally, a biologically significant substance, such as an antibody." *See*, Hainfeld column 1, lines 5–18. Thus, applicants' field of endeavor is different than Hainfeld's, and Hainfeld does not qualify as prior art available for use under § 103 under the first prong of the Federal Circuit's inquiry.

Hainfeld also fails to qualify as analogous prior art under the second prong of the Federal Circuit's inquiry because Hainfeld does not address the problem that applicants' claimed invention addresses. Specifically, applicants' invention is directed to preparing arrays for electronic devices based on the principle of Coulomb blockade. *See*, for example, applicants' specification at page 3, lines 16–18. Hainfeld provides no guidance to a person of ordinary skill in the art seeking to prepare electronic devices or arrays that operate based on the principle of Coulomb blockade. Indeed, Hainfeld is completely silent as to electronic device applications. Thus, Hainfeld is not pertinent to the problem that applicants address and therefore fails the second prong of the Federal Circuit's test for analogous art.

Because Hainfeld does not qualify as analogous art under either prong of the Federal Circuit's controlling case law, Hainfeld cannot be used in an obviousness inquiry against the present application. Therefore, the Patent Office has not established a *prima facie* case of obviousness and applicants respectfully request that the rejections over Hainfeld under 35 U.S.C. § 103 be withdrawn for this reason alone.

V. Double Patenting

Claims 1–3 also are rejected as allegedly constituting double-patenting in view of claims 1–3 of U.S. Patent No. 6,872,971. Claims 1–3 are canceled. Accordingly, applicants submit that this rejection is moot.

VI. Conclusion

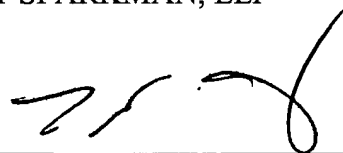
The foregoing amendments place the application in condition for allowance without presenting new issues. Accordingly, applicants respectfully request that claims 4–7 and 9–15 be allowed in the present application. The Examiner is invited to telephone the undersigned if any issues remain before passing this case to allowance.

Respectfully submitted,

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